



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20521
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/998,080	11/30/2001	Jerome J. Cuomo	297/105/2	4519

25297 7590 04/14/2003

JENKINS & WILSON, PA
3100 TOWER BLVD
SUITE 1400
DURHAM, NC 27707

EXAMINER

NHU, DAVID

ART UNIT PAPER NUMBER

2818

DATE MAILED: 04/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/998,080

Applicant(s)

CUOMO ET AL.

Examiner

David Nhu

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 March 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-67 is/are pending in the application.
- 4a) Of the above claim(s) 15,25-31 and 48-56 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14,16-24,32-47 and 57-67 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 21 February 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I (Claims 1-14, 16-24, 32-47, 57-67) in page No.12 is acknowledge. Claims 1-14, 16-24, 32-47, 57-67 are remained for examination. Accordingly, claims 48-56 are withdrawn from consideration. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 112

2. Claims 18, 58 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

It appears that the original specification does not have support for " the M^{III} N layer is provided in a form selected from the group consisting of intrinsic M^{III} N, doped M^{III} N, and M^{III} N alloys and compounds containing greater than 50% M^{III} and N.", which were not described in the specifications.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Art Unit: 2818

4. Claims 40-47, 66-67 are rejected under 35 U.S.C. 102 (e) as being anticipated by Ito et al (6,426,512 B1).

Regarding claim 40, Ito, figures 1-26, and related text on col. 1-36, (figures 1-8, col. 4, lines 50-67, col. 5-12, lines 1-67), disclose a method for producing a single-crystal $M^{III}N$ article comprising the steps of: providing a template material having an epitaxial growth surface; using a sputter apparatus comprising a non-thermionic electron/plasma injector assembly to produce a Group III metal source vapor from a Group III metal target; combining the Group III metal source vapor with an nitrogen containing gas to produce a reactant vapor species comprising Group III metal and nitrogen; and depositing the reactant vapor species on the growth surface to produce a single-crystal $M^{III}N$ layer thereon (see col. 8, lines 1-55).

Regarding claims 41-47, 66-67, see Ito, col. 1-36, lines 1-67.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

6. Claims 62- 65, 32-36 are rejected under 35 U.S.C. 102 (e) as being anticipated by Ito et al (6,426,512 B1).

Regarding claim 62, Ito, figures 1-26, and related text on col. 1-36, (figures 1-8, col. 4, lines 50-67, col. 5-12, lines 1-67), disclose a method for producing a bulk single crystal $M^{III}N$ article comprising the steps of: providing a template material having an epitaxial growth surface;

using a sputter apparatus comprising a non-thermionic electron/plasma injector assembly to produce a Group III metal source vapor from a Group III metal target; combining the Group III metal source vapor with an nitrogen containing gas to produce a reactant vapor species comprising Group III metal and nitrogen; depositing the reactant vapor species on the growth surface to produce a single-crystal $M'''N$ layer thereon; and using the single crystal $M'''N$ layer as a seed crystal to grow a bulk $M'''N$ layer by depositing additional reactant vapor species comprising a Group III metal and nitrogen on the seed crystal (see col. 8, lines 1-55).

Regarding claims 32-36, 63-65, see Ito, col. 1-36, lines 1-67.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

8. Claims 1-14, 16-24, 37-39, 57-61 are rejected under 35 U.S.C. 102 (e) as being anticipated by Ito et al (6,426,512 B1).

Regarding claim 1, Ito, figures 1-26, and related text on col. 1-36, (figures 1-8, col. 4, lines 50-67, col. 5-12, lines 1-67), disclose a method for producing a bulk single crystal $M'''N$ article comprising the steps of: providing a template material having an epitaxial growth surface; sputtering a Group III metal target in a plasma-enhanced environment to produce a Group III metal source vapor; combining the Group III metal source vapor with an nitrogen containing gas to produce a reactant vapor species comprising Group III metal and nitrogen; depositing

Art Unit: 2818

the reactant vapor species on the growth surface to produce a single-crystal $M^{III}N$ layer thereon having a thickness of greater than approximately 10 microns (10000 \AA). See col. 8, lines 1-55, col. 25, figure 18, lines 46-67).

Regarding claims 2-14, 16-24, 37-39, 57-61, see Ito, col. 1-36, lines 1-67.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Fujii'560, Moustakas'738, Marcin'059 are cited as of interest.

10. A shortened statutory period for response to this action is set to expired 3 (three) months and 0 (zero) day from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned (see 710.02 (b)).


11. Any inquiry concerning this communication on earlier communications from the examiner should be directed to David Nhu, (703) 306- 5796. The examiner can normally be reached on Monday-Friday from 7:30 AM to 5:00 PM. The examiner's supervisor, David Nelms can be reached on (703) 308-4910.

The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

David Nhu

DN



April 9, 2003